

WHAT IS CLAIMED IS:

1. A screening method comprising sending a fluid comprising target binder through a conduit to a size exclusion filter, the target binder being too large to pass through the size exclusion filter; sending a second fluid comprising one or more
5 chemicals through the conduit, the one or more chemicals capable of potentially binding to the target binder, the one or more chemicals being small enough to pass through the filter; sending x-rays into the conduit near the size exclusion filter; and monitoring any x-ray fluorescence signal produced from inside the conduit near the size exclusion filter.
- 10 2. The screening method of claim 1, further comprising sending x-rays into the conduit upstream of the size exclusion filter and monitoring any x-ray fluorescence signal produced from inside the conduit upstream of the size exclusion filter.
3. The screening method of claim 1, further comprising sending x-rays into the conduit downstream of the size exclusion filter and monitoring any x-ray
15 fluorescence signal produced from inside the conduit downstream of the size exclusion filter.
4. The screening method of claim 1, wherein the fluid comprising target binder and the fluid comprising one or more chemical comprise aqueous solutions.
5. The screening method of claim 1, wherein the target binder participates in a
20 biological process.
6. The screening method of claim 1, wherein the target binder is selected from the group consisting of enzymes, non-enzyme proteins, DNA, RNA, microorganisms, human cells, plant cells, and animal cells.
7. The screening method of claim 1, wherein the chemicals of the solution of
25 one or more chemicals comprise at least one element having an atomic number greater than eight.
8. An apparatus for screening binding between a target binder and a chemical, comprising an x-ray translucent conduit for fluid comprising target binder and chemical; a filter inside said conduit that substantially blocks the flow of the target
30 binder through the conduit but not the flow of the chemical; an x-ray excitation source capable of sending an x-ray beam through a volume of fluid inside said

conduit; and an x-ray detector capable of receiving an x-ray fluorescence signal produced from said volume of fluid inside said conduit.

9. The apparatus of claim 8, wherein said conduit comprises an x-ray translucent capillary tube.

5 10. The apparatus of claim 8, wherein said conduit comprises conduit walls capable of attenuating the x-ray fluorescence signal by less than a factor of about 10,000.

11. The apparatus of claim 8, wherein the conduit comprises beryllium, boron nitride, silica, or organic polymers.

10 12. The apparatus of claim 8, further comprising a pump for driving fluid through the conduit.

13. The apparatus of claim 8, further comprising a spectrometer, fluorimeter, gas chromatograph, liquid chromatograph, combustion analyzer, or sample collector situated substantially downstream of said filter.